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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/807,363 | 03/23/2004 | Graciela Beatriz Blanchet-Fincher | CL2328 US NA | 3947 |

23906 7590 03/07/2007

E I DU PONT DE NEMOURS AND COMPANY
LEGAL PATENT RECORDS CENTER
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4417 LANCASTER PIKE
WILMINGTON, DE 19805

| EXAMINER | |
|---|---|
| WALKE, AMANDA C | |
| **ART UNIT** | **PAPER NUMBER** |
| 1752 | |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|---|---|---|
| 3 MONTHS | 03/07/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/807,363 | BLANCHET-FINCHER, GRACIELA BEATRIZ | |
| | Examiner | Art Unit | |
| | Amanda C. Walke | 1752 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *08 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-15 and 17-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15 and 17-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-6, 8-15, and 17-28 are alternatively rejected under 35 U.S.C. 103(a) as being unpatentable over Blanchet-Fincher (6,143,451) in view of Wolk et al (6221,553).

Blanchet-Fincher disclose an improved processes for laser thermal imaging and imaged laserable assemblages obtained using the improved processes of this invention are described. These improved processes operate effectively at high speeds and also afford high image densities and good durability of images present on receiver elements upon thermal imaging done in accordance with these improved processes. The invention of the reference is a laser-induced, thermal transfer process which comprises:

(1) imagewise exposing to laser radiation a laserable assemblage comprising:

(A) a donor element comprising in the order listed:

(a) a support;

(b) at least one ejection layer comprising a first polymer;

(c) at least one heating layer; and

(d) at least one transfer layer having an outer surface and comprising (i) a second polymer having a decomposition temperature T<350.degree. C. and (ii) an imageable component;

(B) a receiver element in contact with the outer surface of the transfer layer (d) of the donor element,

wherein the imagewise exposing to laser radiation is effected at a laser fluence of less than or equal to approximately 440 mJ/cm.sup.2, in which a substantial portion of the transfer layer is transferred to the receiver element; and

(2) separating the donor element from the receiver element.

The flexible ejection layer is, in the preferred embodiment, the first of the three functional layers. This layer provides the force to effect transfer of the imageable component to the receiver element. When heated, this layer decomposes into gaseous molecules providing the necessary pressure to propel or eject the imageable component onto the receiver element. This is accomplished by using a polymer having a relatively low decomposition temperature (less than about 350.degree. C., preferably less than about 325.degree. C., and more preferably less than about 280.degree. C.). In the case of polymers having more than one decomposition temperature, the first decomposition temperature should be lower than 350.degree. C. Furthermore, in order for the ejection layer to have suitably high flexibility and conformability, it should have a tensile modulus that is less than or equal to 2.5 Gigapascals (GPa), preferably less than 1.5 GPa, and more preferably less than 1 Gigapascal (GPa). The polymer chosen should also be one that is dimensionally stable. If the laserable assemblage is imaged through the donor flexible ejection layer, the flexible ejection layer should be capable of transmitting the laser radiation, and not be adversely affected by this radiation. Examples of suitable polymers include (a) polycarbonates having low decomposition temperatures (Td), such as polypropylene carbonate; (b) substituted styrene polymers having low decomposition temperatures, such as poly(alpha-methylstyrene);

(c) polyacrylate and polymethacrylate esters, such as polymethylmethacrylate and polybutylmethacrylate; (d) cellulosic materials having low decomposition temperatures (Td), such as cellulose acetate butyrate and nitrocellulose; and (e) other polymers such as polyvinyl chloride; poly(chlorovinyl chloride) polyacetals; polyvinylidene chloride; polyurethanes with low Td; polyesters; polyorthoesters; acrylonitrile and substituted acrylonitrile polymers; maleic acid resins; and copolymers of the above. Mixtures of polymers can also be used. Additional examples of polymers having low decomposition temperatures can be found in Foley et al., U.S. Pat. No. 5,156,938. These include polymers which undergo acid-catalyzed decomposition. For these polymers, it is frequently desirable to include one or more hydrogen donors with the polymer. When the absorbing dye is incorporated in the ejection layer, its function is to absorb the incident radiation and convert this into heat, leading to more efficient heating. It is preferred that the dye absorb in the infrared region. For imaging applications, it is also preferred that the dye have very low absorption in the visible region. Examples of suitable infrared absorbing dyes which can be used alone or in combination include poly(substituted) phthalocyanine compounds and metal-containing phthalocyanine compounds; cyanine dyes; squarylium dyes; chalcogenopyryloacrylidene dyes; croconium dyes; metal thiolate dyes; bis(chalcogenopyrylo) polymethine dyes; oxyindolizine dyes; bis(aminoaryl) polymethine dyes; merocyanine dyes; and quinoid dyes. Preferred polymers for the transfer layer are (meth)acrylic polymers, including, but not limited to, acrylate homopolymers and copolymers, methacrylate homopolymers and copolymers, (meth)acrylate block copolymers, and (meth)acrylate copolymers containing other comonomer types, such as styrene.

The reference teaches that the transfer layer may comprise more than one layer.

Wolk et al disclose a similar transfer material./ donor element to that of the primary reference. The reference teaches that it is advantageous to employ a dual-layer transfer layer comprising a first layer comprising a semiconducting material (Examples of suitable polymers include acrylic polymers, polyanilines, polythiophenes, poly(phenylenevinylenes), polyacetylenes, and other conductive organic materials), and a second layer (either a relase or adhesive layer) which would serve as a ptotective layer.

Given the teachings of the reference, it would have been obvious to one of ordinary skill in the art to prepare the material of Blanchet-Finsher, choosing to employ the advantageous dual layer transfer layer system of Wolk et al, with reasonable expectation of achieving a material having high image density and durability.

3. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blanchet-Fincher or Blanchet-Fincher in view of Wolk et al in view of Fincher et al (6,818,363).

Blanchet-Fincher has been discussed above, but fails to specify the type of IR dye added to the ejection layer.

Fincher et al disclose a thermally imageable material comprising multiple colorants that are conventional in IR polymeric compositions. These colorants include Some useful solvent soluble dyes include 3-H-Indolium, 2-[2-[2-chloro-3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)ethylidene]-1-cyclopenten-1-yl]ethyenyl]-1,3,3-trimethyl-, salt with trifluoromethane sulfonic acid, but additional counterions include bromide, chloride, perchlorate and "Tosylate", a contraction for "para-Toluenesulfonate", the anion formed by neutralizing para-toluenesulfonic acid with base. Tosylate is an organic soluble, inert anion which functions similarly to anions like chloride, bromide, etc.

Given the teachings of the reference, it would have been obvious to one of ordinary skill in the art to prepare the material of Blanchet-Finsher, choosing to include 3-H-Indolium, 2-[2-[2-chloro-3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)ethylidene]-1- cyclopenten-1-yl]ethyenyl]-1,3,3-trimethyl-, salt with perchlorate as the dye as taught by Fincher et al, with reasonable expectation of achieving a material having high image density and durability.

***Response to Arguments***

4. Applicant's arguments filed 12/8/2006 have been fully considered but they are not persuasive. Applicant has argued that the references fail to teach a material meeting the instant claim limitations. The Wolk reference teaches that suitable materials for the adhesive layer include thermoplastic resins, and acrylic type resins, of which, a commonly employed acrylic resin comprises a methyl group, thus a methacrylic resin. "Acrylic" resins broadly includes both acrylic and methacrylic monomers as supported by the Wikipedia entry for "Acrylic resins" and product information from Arkema Inc (attached). Additionally, the examiner erred in the mention of the Zr particles, and hereby withdraws that statement.

***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amanda C. Walke whose telephone number is 571-272-1337. The examiner can normally be reached on M-R 5:30-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Amanda C Walke
Primary Examiner
Art Unit 1752

ACW
March 5, 2007

Amanda C Walke
AMANDA WALKE
PRIMARY EXAMINER 3/5/07